common substrate with an extractor arranged no more than 50nm from the emitter to extract charge carriers therefrom and

a specimen adjacent the source, to receive a flux of charge carriers from the source.

2. (Previously Presented) Apparatus according to claim 1, wherein the emitter has a tip radius less than 2nm.

3. (Previously Presented) Apparatus according to claim 2, wherein the emitter had a tip radius less than 1nm.

4. (Previously Presented) Apparatus according to clam 1, wherein the extractor is arranged no more than 30nm from the emitter.

5. (Previously Presented) Apparatus according to claim 1, wherein the emitter nad extractor are configured such that said charge carries are extracted while a bias is applied to te extractor relative to the emitter.

6. (Previously Presented) Apparatus according to claim 5, wherein the relative applied bias is positive.

7. (Previously Presented) Apparatus according to claim 5, wherein the relative applied bias is between 7 to 20 V.

8. (Previously Presented) Apparatus according to claim 1 including a bias source the apply bias to the specimen relative to the emitter.

9. (Previously Presented) Apparatus according to claim 8, wherein the bias applied by the bias source to the specimen is positive relative to the emitter.

10. (Previously Presented) Apparatus according to claim 8, wherein the bias applied by the bias source to the specimen is between 14 to 40 V relative to the emitter.

11. (Previously Presented) Apparatus according to claim 1, wherein the emitter comprises a metal.

12. (Previously Presented) Apparatus according to claim 11, wherein the metal comprises tungsten.

13. (Previously Presented) Apparatus according to claim 12, wherein the emitter comprises a tip member.

14. (Previously Presented) Apparatus according to claim 13, wherein the tip member comprises an alloy of gold and palladium.

15. (Previously Presented) Apparatus according to claim 13, wherein the tip member has a tip radius less than 2nm.

16. (Previously Presented) Apparatus according to claim 1, wherein the extractor comprises tungsten.

17. (Previously Presented) Apparatus according to claim 1, wherein the extractor comprises a sheet having an aperture.

18. (Previously Presented) Apparatus according to claim 17, wherein the diameter of the aperture is less than 100nm.

19. (Previously Presented) Apparatus according to claim 18, wherein the diameter of the aperture is less than 50nm.

20. (Previously Presented) Apparatus according to claim 1, wherein the source further comprises a collector for collecting charge carriers.

21. (Previously Presented) Apparatus according to claim 1, wherein the source further comprises a deflector for deflecting flux of charge carriers.

22. (Previously Presented) Apparatus according to claim 1, wherein the source further comprises a lens for focusing the flux of charge carriers.

23. (Previously Presented) Apparatus according to claim 1, wherein the flux of charge carriers is a charge carrier beam.

24. (Previously Presented) Apparatus according to claim 1 configured to operate in air at atmospheric pressure.

25. (Previously Presented) Apparatus according to claim 1, wherein the charge carriers are electrons.

26. (Previously Presented) Apparatus according to claim 1, wherein the emitter and the specimen are disposed less than 20nm from each other.

27. (Previously Presented) Apparatus for producing a flux of charge carriers comprising:

a source which comprises an emitter and an extractor to extract charge carriers from an emitter, wherein the emitter and the extractor are configured on a common substrate and

a specimen,

wherein the emitter and the specimen are arranged in a near-field configuration.

28. (Previously Presented) Apparatus according to claim 27, wherein the near-filed configuration phase coherence of the charge carries is substantially maintained.

29. (Previously Presented) Apparatus according to claim 27, wherein the near-filed configuration comprises an arrangement whereby the emitter and the specimen are disposed less than 200nm from each other.

30. (Previously Presented) Apparatus according to claim 27, wherein the extractor is arranged no more than 50n from the emitter.

31. (Previously Presented) Apparatus according to claim 27, wherein the extractor is arranged no more than 30nm from the emitter.

32. (Previously Presented) Apparatus for producing a flux of charge carriers comprising:

a source which comprises:

an extractor to extract charge carrier from the emitter,

wherein the emitter and the extractor are configured so as to allow extraction of charge carriers under a gaseous atmosphere without ionisation of the gas and

a specimen adjacent to the source, to receive a flux of charge carriers from the source.

33. (Previously Presented) Apparatus according to claim 32, wherein the emitter and extractor are configured such that said charge carriers are extracted while a bias is applied to the extractor relative to the emitter.

34. (Previously Presented) Apparatus according to claim 33, wherein the relative applied bias is positive.

35. (Previously Presented) Apparatus according to claim 34, wherein the relative applied bias is between 7 to 20 V.

36. (Previously Presented) Apparatus for producing a flux of charge carriers comprising:

a source which comprises:

an emitter and

an extractor to extract charge carriers while a turn-on bias of less than 100 V is applied to the extractor relative to the emitter and

a specimen adjacent the source, to receive a flux of charge carriers from the source.

37. (Previously Presented) Apparatus according to claim 36, wherein the turn-on bias is less than 10 V.

38. (Previously Presented) A method of producing a flux of charge carriers, the method comprising:

providing a source comprising configuring an emitter having a nanometre scale tip radius on a substrate with an extractor arranged no more than 50nm from the emitter ti extract charge carriers therefrom and

providing a specimen adjacent the source, to receive a flux of charge carriers from the source.

39. Canceled.